

## Minutes of Meeting IEC TC14 MT60214

Date: September 12th and 13<sup>th</sup>, 2016 (9<sup>th</sup> meeting)  
 Venue: HIGHVOLT Prüftechnik GmbH, Dresden, DE  
 Room: Meeting room

### 1 Opening of the meeting

Monday, September 12<sup>th</sup>, 2016, 09:00am

### 2 General information

#### a. Membership

new members since 8<sup>th</sup> MT meeting

- David Geibel, US NC (2016-06-21)

#### b. Attendance sheet (participants)

Function	Last Name	First Name	NC	Remarks
Member	Ali	Mustafa	PK	not attending
Member	Andersson	Gunnar	SE	X
Member	Carollo	Carlo	IT	X
Member IEEE	Colopy	Craig	US	X
Member IEEE	Dix	Larry	US	X
Member	Drobishevsky	Alexander	RU	not attending
Member	Dyer	Paul	GB	X
Member	Eguchi	Naoki	JP	not attending
Member	Foata	Marc	CA	X
Member	Fuwa	Yasushi	JP	X
Member	Gyore	Attila	HU	X
IEEE	Geibel	Dave	US	X
Member	Jarman	Paul	GB	not attending
Convenor IEEE	Kraemer	Axel	DE	X
Member	Pegoraro	Luigi	IT	X
Member	Sato	Shigekatsu	JP	not attending
Member	Sridhar		IN	not attending
Member	Bengt-Olof	Stenestam	SE	not attending
Member	Washiyama	Yuki	JP	not attending
Member	Zheng	Shuyu	CN	not attending
Guest				

Total number of members: 20

#### c. Attendance rate

Meeting	Members present	Members absent	Attendance rate [%]	Guests
Kyoto (2014)	11	4	73,3	1
Montreal (2014)	8	8	50,0	3
Washington (2014)	11	5	68,8	6
London (2015)	10	6	62,5	1
Stockholm (2015)	9	7	56,3	4
Memphis (2015)	9(10)	9(8)	50,0	8
Venice (2016)	8	11	42,1	2
Nashville (2016)	8	11	42,1	6

Dresden (2016)	11	9	55,0	0
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**d. Project timeline:**

<b>Committee Draft (CD):</b>	<b>2017-03</b>
<b>Committee Draft for voting (CDV):</b>	<b>2017-09</b>
<b>Final Draft International Standard (FDIS):</b>	<b>2018-09</b>
<b>International Standard (IS):</b>	<b>2019-03</b>

**3 MoM of the 8th meeting**

Paragraph	Decision	Who	done
	No comments		✓

**4 Unresolved tasks from previous working documents (1WD to 4WD)**

**4.1 Topics from 3WD IEC 60214-2 (Draft after London meeting), distributed in May 2015**

Paragraph	Decision	Who	done
6.1.3.1 & 6.1.3.2 (6.2.3.1 & 6.2.3.2)	This section was discussed with the team and it was decided in lieu of an Annex sections would be combined with the table and comments provided by Marc and the team. Sections will not be separated as shown in the last draft.		✓
	MF proposals: MF_Physical_Layouts_Text_Proposal_for_Stockholm_Meeting.docx	MF	✓
	selector switches have to be included in the text “advantage” has to be exchanged with “property”	AK	✓
	Change oil with liquid	AK	✓
	Figure “Common layouts for compartment type tap-changers – Single compartment”, Legend numbers 4 and 5,6,7 have to be switched	MF	✓
	New Figure: MF_Single Bolt-on		
	Figure “Common layouts for compartment type tap-changers – Double compartment”, There are two barrier boards, the second between selector and diverter. New Figure: MF_Double Bolt-on The new Figure was discussed. Take the motor-drive mechanism and put it below the tap-changer compartment. Decision: Prepare a Figure and text proposal for covering double compartment type resistor and reactor type tap-changer	MF	✓
	The existing text (MF_Physical_Layouts_-- _after_Memphis_meetingV0.docx) with new Figure Single compartment shall be incorporated into the Draft after Memphis, the changes regarding the double compartment topic will be included afterwards in the draft after Memphis.	AK	✓

	<p>proposed correction for key in Figure 12</p> <p>MF Figure_12.pdf</p> <p>proposed correction for "single bolt-on figure" in Figure 12</p> <p>MF Figure_12 Single Bolt-on.bmp</p>	MF	✓
		MF	✓
	<p><b>Decision:</b></p> <p>The proposals didn't cover the topic and MF will make a new proposal for the September 2016 meeting</p> <p><a href="#">MF's proposal: MF 6_1_3 Physical layouts.docx</a></p> <p><b>Put the changed text into the document</b></p>	MF AK	✓  open
6.4.3 (6.5.3)	Text needed to explain tap changer and placement of it for step-voltage regulators. Reference 60076-21	CAC	
	<p>depending on the decision if an step-voltage regulator annex will be created is this text to be put into Annex or in paragraph 6.5.3</p> <p><b>Decision:</b></p> <p>With the decision to have no step-voltage regulator Annex with respect to the winding arrangement, a short description and/or a reference to the step-voltage regulator standard should be established</p>	CAC CAC	open
	<p><b>decision:</b></p> <p><a href="#">CAC will provide a proposal</a></p> <p><b>CAC will provide a proposal for the Vancouver meeting</b></p>	CAC	open
12.1.2	<p>The contact resistance measurement issue of SR (SR(London)_CL 12.1.2 CONTACT RESISTANCE.docx) shall be covered in the contact resistance measurement paragraph 12.1.2</p> <p>Statement covering this issue was provided by SR. Group agrees phenomenon needs to be addressed in Guide. Should consider adding a minimum amount of current for testing purposes. Comments will be discussed at next meeting</p>		
	<p>text proposal of GA has to be reviewed by the members</p> <p>GA's new proposal (<a href="#">GA_3_CL_12_1_2_CONTACT_RESISTANCEsenttoAxel151107.docx</a>) on resistance measurements was discussed, changed and agreed</p> <p>Text shall be incorporated into the Draft</p>	AK	✓
	<p>INFO (received after the Memphis meeting):</p> <p>Further information on measuring current see:</p> <p><a href="#">GA_121.2 Contactres.Meas curr.docx</a></p> <p>No changes in the draft</p>	All All	✓ ✓
	<p>Definition for fritting is needed,</p> <p>see document (<a href="#">GA_Slade_para_on_fritting.docx</a>) for further discussion.</p> <p>Add the following sentence to the §3, definitions</p>	AK	✓
	<p>Fritting in the sense of this standard is an electrically intimate metal-to-metal contact created by the dielectric breakdown of a very thin film.</p>		✓

	The part dealing with DRM shall be incorporated as an own section. GA will prepare a short verbiage about DRM proposal: GA 12_1 Commissioning complete proposal.docx	GA	✓
	<b>Decision:</b> The paragraph on DRM written by GA shall not be incorporated. Instead the list of different monitoring topics (12.4.3) shall be checked and completed if necessary.  CIGRE publications on condition assessment shall be identified and if possible a appropriate reference shall be made in the draft. (e.g. WGA2.42...)  <a href="#">MF's proposal: MF 12_1 Measures during comissioning.docx</a>  Put the changed text into the document	MF AK	✓  open

#### 4.2 Topics from 4WD IEC 60214-2 (Draft after Venice meeting), distributed in March 2016

Paragraph	Decision	Who	done
	none		✓

#### 4.3 Topics from 5WD IEC 60214-2 (Draft after Nashville meeting), distributed in June 2016

Paragraph	Decision	Who	done
	none		✓

### 5 Unresolved tasks from previous meetings

Paragraph	Decision	Who	done
7.4.8	New text (7.4.8 Overloading) shall be studied by the group and finally discussed/agreed at the next meeting		
	Proposal within: GA_7.4.7 new7.4.8 _ 9.4 _ 9.5 after Stockholm meeting 150609	GA	✓
	Topic (7.4.8) is postponed to the next meeting		
	Check the overload limits in IEEE Take the discussed and changed text and put into the draft	Dave Geibel AK	✓

	Decision: Consider the changed text of 7.4.8 in 5WD for the next meeting. Opinions and /or proposals shall be distributed at least three weeks before the next meeting takes place.	ALL	open
	Florin Faur volunteers to provide a paragraph on overload for discussion at the next meeting.	Florin Faur	✓
	Florin's proposal: <a href="#">FF(DG) 7_4_8 Overloading OLTC.docx</a>		
	Combine the existing text in the draft with Florin's proposal and pages 5&6 of GA's statement <a href="#">GA Overloads for IEC 160819.docx</a>	MF/AK	open
	MF/AK will send their proposal to DG/GA for comments	AK	open
During the discussion the term consecutive operation was changed to continuous consecutive operation. A new definition was added. These changes were made directly in the 6WD	AK	✓	

## 6 Ideas for issues/paragraphs to be added

### 6.1 Presentation of the tasks addressed in the meetings so far

Paragraph	Decision	Who	done
	no written proposal not discussed so far		✓

### 6.2 Open tasks

Paragraph	Decision	Who	done
11 (whole paragraph)	Mounting and Testing on the Transformer comment MF MF Figure_12.pdf	MF	✓
	Decision: see following topics		✓
11.1	Storage before assembly no text so far		
	Decision: Some verbiage will be provided DG's proposal: <a href="#">DG 11_1 Storage of OLTC and DeTC when not in operation.docx</a> YF's addendum to DG's proposal: <a href="#">YF Addition 11_1 Storage of OLTC and DeTC when not in operation.docx</a> Put the changed text into the document	Dave Geibel  AK	✓  open
11.3	Tap-changer assembly within the transformer tank no text so far		

	<p>Decision: MF will propose a general text</p> <p>MF'S proposal: <a href="#">MF 11_3 Tap-changer assembly.docx</a></p> <p>Put the changed text into the document</p>	MF AK	✓ open
11.5	<p>11.5 Drying process</p> <p>no text so far</p>		
	<p>Decision: Florin will provide a proposal for the next meeting. The draft shall be sent to YF before to incorporate the SF6 sight.</p> <p>Florin's proposal: <a href="#">FF(DG) 11_5 Drying of OLTC.docx</a></p> <p>YF's addendum to Florin's proposal: <a href="#">YF Addition 11_5 Drying of OLTC.docx</a></p> <p>Put the changed text into the document (changed title)</p>	Florin Faur YF AK	✓ ✓ open
11.8	<p>proposal for a new sub-clause</p> <p>dealing with sealings, gaskets and mounting issues</p> <p>Decision: MF will provide a proposal (cross reference to a CIGRE paper)</p> <p>MF's proposal: <a href="#">MF 11_8 Gaskets and sealing systems.docx</a></p> <p>Put the text at the end of sub-clause 11.3 and delete 11.8.</p>	MF AK	✓ open
12.1 (whole paragraph)	<p>Measures during commissioning</p> <p>Proposal GA</p> <p>GA 12_1 Commissioning complete proposal.docx</p>	GA	✓
	<p>Decision:</p> <p>The NOTE of 12.1.2 is placed already at the end of 11.6 and will be deleted here as proposed by GA in his proposal. A reference sentence was added to the proposal</p> <p>Take the modified text and put it into 5WD</p>	AK	✓
	<p><b>Open questions:</b></p> <p><a href="#">paragraph 12.1.1 has to be discussed at the next meeting with PD</a></p> <p>changes were done directly in the 6WD</p>	ALL	✓
	<p><b>During the preparation of the 5WD the following situation in 12.1.3 arose:</b></p> <p>An introductory paragraph was part of an earlier proposal of GA to this topic and is not shown in GA's actual proposal. Due to the use of the wording "fritting", we have added a definition for fritting in chapter 3.</p> <p>Decision has to be made if the introductory paragraph was forgotten in the last proposal of GA or if it was deleted by GA, then also the definition in chapter 3 has to be deleted.</p> <p>GA will check the right version</p>	GA	open

	<p>Operation</p> <p>Text needs update</p> <p>Proposal AK (proposal for 12.2.2)</p> <p>AK 12_2 Operation.docx</p>	AK	✓
12.2 (whole paragraph)	<p>Decision:</p> <p>take the modified text and put into 5WD</p> <p>for 12.2.1 check if a reference can be made to IEEE C57.153 Paralleling guide</p> <p>AK's proposal: <a href="#">AK 12_2_1 Parallel Operation.docx</a></p> <p>Put the changed text into the 6WD and add the two references (IEEE C57.153 and IEC 60076-8) to clause 2.</p>	AK	✓
		AK	✓
		AK	open
	<p>proposal SR for 12.2.2 on shunt contact arcing</p> <p>SR-AK 12_2 NOTE ON SHUNT ARCING FOR DISCUSSION AND FINALIZATION AT NASHVILLE.docx</p>	SR	
	<p>Decision: take the modified text and put it into 5WD</p>	AK	✓
	<p>proposal SR for 12.2.2.</p> <p>SR 12_2_2 Contact erosion.pdf</p>	SR	
	<p>Decision: covered already in "AK 12 2 Operation.doc"</p>	no further action	✓
12.4 (whole paragraph)	<p>members shall think about possible monitoring devices to create a list, afterwards texts will be provided</p>	All	open
	<p>GA's list: <a href="#">GA Monitoring systems Stina BOS.docx</a></p> <p>AK and MF will propose a "new" structure of this clause respecting other standards and the outcome of the CIGRÉ WG 2.34, distribution per email for comments. Target: November</p>	GA AK/MF	✓ open
	<p>Monitoring parameters</p> <p>Text needs update and some paragraphs have no text (12.4.1.3, 12.4.1.4 and 12.4.1.5)</p>		
	<p>Postponed to the next meeting in Nashville</p>		
12.4.1.2	<p>Decision:</p> <p>check the existing paragraph on DGA (12.4.1.2)</p> <p>GA's proposal: <a href="#">GA 12_4_1 Insulating liquid testing (Proposals for section 12).docx</a></p> <p>GA will cross-check the requirements given in "Sampling, marking, and storage" with IEC 60475.</p> <p>Add a NOTE not to take samples from energized sealed equipment without checking the pressure. Prevent the tap-changer to be operated during oil sampling, NOTE?</p> <p>Take the changed text and put in the 6WD, GA's additional proposals will be incorporated later</p>	GA GA GA AK	✓ open open open

12.4.1.3	Breakdown voltage no text so far		
	Decision: proposal to be prepared <a href="#">GA's proposal: GA 12 4 1 Insulating liquid testing (Proposals for section 12).docx</a> Take the changed text and put it in the 6WD	GA AK	✓ open
12.4.1.4	Moisture content no text so far		
	Decision: proposal to be prepared <a href="#">GA's proposal: GA 12 4 1 Insulating liquid testing (Proposals for section 12).docx</a> Take the changed text and put it in the 6WD	GA AK	✓ open
13.4	Operation of step voltage regulators no text so far	CAC	
	Decision: proposal will be prepared CAC will provide a proposal for the Vancouver meeting	CAC	open

### 6.3 New tasks

Paragraph	Decision	Who	done
Scope?	Something should be said at the beginning of the document that the recommendations or instructions of the manufacturer must be followed also when using this guide <a href="#">AK's proposal: AK INTRODUCTION.docx</a> Put the changed text into the document	AK AK	✓ open
	Cautionary note for coupling and operation of the tap-changer without the motor drive mounted. Proposal to be prepared. <a href="#">AK's proposal: AK 11 3 Tap-changer assembly (cautionary note).docx</a> Put the text between the installation and the gasket issues.	AK AK	✓ open
different	different proposals of SR, decisions are saved in the document Final discussion on SR's proposals: <a href="#">SR LIST OF CONTRIBUTIONS NASHVILLE.doc</a> AK tries to solve this issue with SR per email.	SR AK	open open



13.2	Rewording of Operation of on-load tap-changers, especially with regard to the use of a manual drive when the transformer is in service.	AK	✓
	AK's proposal: <a href="#">AK 13_2 Operation of an on-load tap-changers.docx</a> Put the changed text into the 6WD This text shall be checked by PD	AK	open

## 7 Draft 6WD

All members are invited to look through the complete Draft 6WD and to identify necessary changes or additions up to the meeting following Vancouver.

## 8 Future meetings

Decision	Who
27 <sup>th</sup> , 28 <sup>th</sup> October (in connection with the IEEE Transformers Committee meeting) Vancouver, BC, Canada	
Proposal: London in beginning 2017, has to be checked with PD	

## 9 Any other business

All text- or discussion-proposals, which shall be discussed in the upcoming meeting, shall be distributed at least **three weeks** before the meeting to the members. With this measure everybody has the chance to prepare himself and have a look to the proposal.

## 10 Closing of the meeting

Tuesday, September 13<sup>th</sup>, 2016, 03:00pm

## 11 Abbreviations

Member	Abbreviation
Mustafa Ali	MA
Gunnar Andersson	GA
Carlo Carollo	CC
Craig Colopy	CAC
Larry Dix	LD
Alexander Drobishevsky	AD
Paul Dyer	PD
Naoki Eguchi	NE
Marc Foata	MF
Yasushi Fuwa	YF
Dave Geibel	DG
Attila Gyore	AG
Paul Jarman	PJ
Axel Kraemer	AK
Luigi Pegoraro	LP
Shigekatsu Sato	SS
Sridhar	SR
Bengt-Olof Stenestam	BOS
Yuki Washiyama	YW
Shuyu Zheng	SZ